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to a sound knowledge of the fundamental ideas involved. As leading towards this the author said he has always advocated personal instruction in the use and adjustment of instruments, as well as the useful practise which may be obtained in a students' surveying camp, but that before either of these is possible the student must have mastered the bedrock principles, and the author hopes that a careful perusal of the pages of the volume may help him to do this.

The book is disappointing and is not recommended to the student of engineering nor to the practising engineer as a guide or manual. It seems to be more suited to the old-fashioned county surveyor, with his Jacob's staff and Gunter's chain, for the county surveyor of today, in the United States at least, is more inclined to use the steel tape and the transit than those old instruments, which should be relegated to the museum.

The chapter on "Calculations of Distances and Heights" opens with the statement that "It is assumed that the reader has some knowledge of plane trigonometry." In this country there is probably no school teaching surveying which does not require a rather thorough course in plane trigonometry as a preliminary to the course in surveying.

Under the heading, "Levelling and Contouring" this significant statement is made: "The staff-holder should be very careful to see that the particular spot of ground upon which the staff rests is fairly flat, and if the ground is of a soft or spongy nature the spot should be pressed down with the foot." This is not teaching correct principles, for there is scarcely any leveling which should not require solid supports for the rod, and the earth, even if "*pressed down by the foot*," can not be considered a satisfactory rod support.

The short chapter on "Geodetic or Trigonometrical Surveying" is almost entirely historical and gives the student nothing which would guide him in actual work. Even the historical part does not include the recent developments and methods.

The chapter on "Geodetic Astronomy" is particularly disappointing, for it deals with

only those methods which might be used in explorations and in determining the variation of the compass.

It is very difficult to see where or how such a book has any useful purpose, for there are so many other books available which are far better for both the student and the engineer.

WILLIAM BOWIE

*Diabetes Mellitus.* By NELLIS B. FOSTER, M.D. J. B. Lippincott and Company, 1915.

This is a model monograph for the modern practising physician. Clearly written and not too technical in language, it is still thoroughly scientific in the mode of presentation. The rapid advance in the knowledge of the fundamental biochemical processes which take place within the living body has nowhere been more pronounced than in studies concerning the nature of diabetes, a disease in which the oxidation of glucose, a substance which ordinarily furnishes two thirds of all the chemical transformations of the organism, has been impaired or totally abolished. Dr. Foster has presented all the essential details concerning the pathological chemistry of diabetes, and has at the same time written from that three-fold standpoint which controls the value of a modern medical book, personal research, personal clinical experience, knowledge of the research and clinical experience of the best authorities of the modern world. In no other book on diabetes has the value of American work been so fully recognized, and the reviewer feels that it is the best book upon the subject which has been written.

GRAHAM LUSK

## SPECIAL ARTICLES

### PERMEABILITY AND VISCOSITY

IN a recent article<sup>1</sup> Spaeth has suggested that the permeability of the surface layer of protoplasm is determined by its viscosity, which in turn depends on its colloidal condition. Increased permeability may be produced by increased colloidal dispersion, which decreases viscosity and permits substances to diffuse more rapidly into the protoplasm. An

<sup>1</sup> SCIENCE, N. S., 43: 502, 1916.